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# A NEW CRAWFISH OF THE GENUS *ORCONECTES* FROM THE HEADWATERS OF THE WHITE RIVER IN ARKANSAS (DECAPODA, ASTACIDAE)

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In the summer of 1961 Dr. Perry C. Holt gave me a small collection of crawfishes which he had collected from the headwaters of the White River in Arkansas. They proved to be an undescribed species of the genus *Orconectes*. In January, 1965, I collected in Madison County, Arkansas and was able to add two more localities for this new species. All of the localities are in the headwaters of the White River in Madison County, Arkansas.

I wish to express my thanks to Dr. Holt, to Dr. Horton H. Hobbs, Jr., who confirmed my diagnosis and critically read this manuscript, and to my wife, Sarah E. Fitzpatrick, who is my usual helpmate in field collections.

This new species is named in honor of Dr. Austin B. Williams in recognition of his contributions to the knowledge of Ozark–Ouachita crawfishes.

**Orconectes williamsi,** new species

*Diagnosis*: Pigmented; eyes normal. Rostrum with small marginal spines or tubercles, concave above, median carina absent, margins slightly converging, slightly inflated at base but not otherwise thickened; areola length 32–35 percent of entire carapace length, 4.8–5.2 times longer than broad, with 4–5 punctations across narrowest part. Postorbital ridges strong, terminating cephalically in strong divergent corneous tubercles or spines; carapace without cervical spine or tubercle. First pleopod of first form male reaching cephalic margin of third pereiopod coxopodite when abdomen is flexed; no strong cephalic shoulder present; central projection longer than mesial process with tip curving caudodistally over mesial process; tips divergent, mesial process straight and

setiform, tapering from base to tip. Annulus ventralis immovable, subrhomboid in outline, with deep transverse trough in middle third.

*Holotypic male, Form I*: Body subcylindrical, slightly depressed. Abdomen narrower than cephalothorax (9.0, 10.9 mm in widest parts, respectively); carapace width greater than depth in region of caudodorsal margin of cervical groove (10.9, 8.3 mm).

Areola moderately broad (5.2 times longer than wide), with 4–5 punctations across narrowest part. Cephalic section of carapace about 2.04 times as long as areola; areola length 32.8 percent of entire length of carapace.

Rostrum margins slightly converging, not distinctly thickened, expanded basally, terminating cephalad in very weak corneous spines; distinctly campanulate outline in dorsal aspect; upper surface moderately concave and bearing setiferous punctations. Acumen long, broad, extending cephalad to distal end of antennule peduncle; tip not upturned. Subrostral ridges evident in dorsal aspect for short distance at bases.

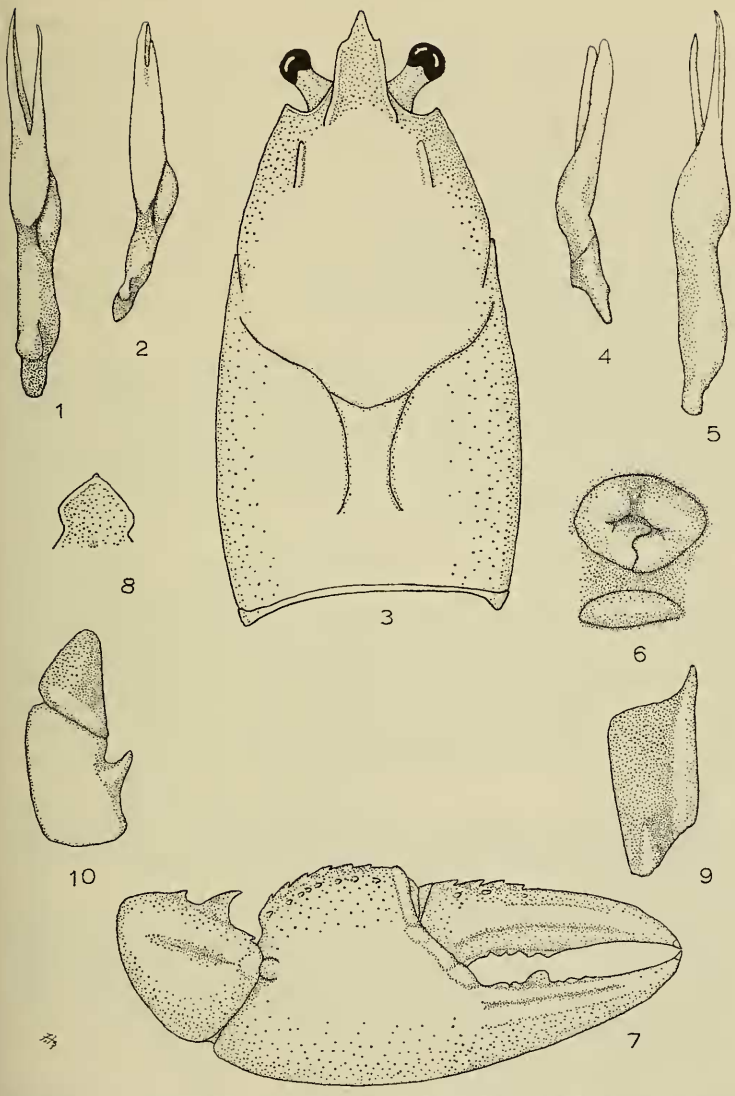
Postorbital ridges strong, grooved dorsolaterally, produced cephalad in prominent divergent tubercles. Suborbital angles acute. Branchiostegal spines acute. Cervical spines or tubercles lacking. Entire carapace studded with setiferous punctations except cephalolateral ventral portions, which bear setiferous granulations.

Abdomen longer than carapace (22.0, 20.7 mm). Cephalic section of telson with two spines in each caudolateral corner.

Epistome (Fig. 8) subrhomboidal in outline with tubercular cephalomedian projection.

Antennules of usual form with prominent spine on ventral surface of basal segment. Antennae broken, but probably reaching caudal region of abdomen. Antennal scale (Fig. 9) about 1.6 times longer than broad with lamellar portion subrectangular in outline, slightly expanding distally.

Chela (Fig. 7) somewhat depressed, palm inflated, all surfaces bearing setiferous punctations. Tubercle present on lower surface of palm at dactyl base. Palm inner margin with two irregular rows of tubercles, lower row of six, upper row of eight. Fingers gaping slightly throughout their length. Upper surface of immovable finger with broad submedian longitudinal ridge flanked by setiferous punctations; another ridge along proximal three-fourths of finger immediately mesial to aforementioned ridge. Outer margin of immovable finger with well-defined keel extending proximally one-half length of palm; opposable margin with row of two small, one large, three small (basal to distal) tubercles along basal two-thirds and crowded minute denticles along distal one-third; lower surface with submedian longitudinal ridge. Dactyl similar to immovable finger above and below; mesial margin with double row of tubercles, lower row of four, upper row of three, extending about halfway from base to tip; opposable margin with four tubercles along basal half and crowded minute denticles in distal half.




Figs. 1–10. *Orconectes williamsi,* new species. 1. Mesial view of first pleopod of holotype. 2. Mesial view of first pleopod of morphotype. 3. Dorsal view of carapace of holotype. 4. Lateral view of first pleopod of morphotype. 5. Lateral view of first pleopod of holotype. 6. Annulus ventralis of allotype. 7. Upper surface of distal podomeres of cheliped of holotype. 8. Epistome of holotype. 9. Antennal scale of holotype. 10. Basipodite and ischiopodite of third pereiopod of holotype.

Cheliped carpus longer than broad, with broad shallow longitudinal furrow above; setiferous punctations over entire surface; mesial surface with prominent, curved, acute spine, upper mesiodistal surface with smaller spine, upper proximomesial surface with small acute spine; lower submedian distal margin and lower laterodistal margin each with strong spine. Upper and lower surfaces of merus with scattered setiferous punctations; lateral surfaces generally smooth; three spines on upper distal surface; lower mesial surface with row of nine acute spines increasing in size distally, terminating in single strong acute spine; lower laterodistal margin with single acute spine and row of one spine and three tubercles proximal to aforementioned spine. Lower proximal ischiopodite surface with small rounded tubercle. Hooks on third pereiopod ischiopodites only (Fig. 10); hooks simple.

First pleopod extending cephalad to cephalic margin of third pereiopod when abdomen is flexed. Tip terminating in two distinct, slightly divergent parts; rami separated for moderate distance from tips (Figs. 1, 5). Central projection corneous, straight except tip curved caudodistally. Mesial process not extending so far distad as central projection, noncorneous, setiform, tapering from base to tip. Pleopods symmetrical (*sensu* Hobbs, 1962).

*Morphotypic male, Form II*: Differs from holotype in the following respects: margins of rostrum not quite so converging distally, terminating cephalad in small tubercle on right side, ornamentation lacking on left cephalic terminus of rostral margin but strong shoulder at base of acumen. Palm of cheliped less inflated and proportionately smaller. Hooks on ischiopodites of third pereiopods much reduced. Both elements of first pleopod noncorneous, blunter, and in close approximation almost to tips; suture delimiting basal and distal portions of pleopod (Figs. 2, 4).

*Allotypic female:* Differs from holotype in the following respects: cheliped palm less inflated and proportionately smaller. First pleopod biramous and weakly developed. Postorbital ridges terminating cephalically in spines.

Annulus ventralis immovable, about as long as broad, prominently elevated (ventrally) above sternum. Deep transverse trough in middle third. Sinus arising in cephalomedian portion of trough, curving sharply sinistrad and gently caudad, recurving to midline, then turning caudad to wind sinously to submedian caudal margin of annulus (Fig. 6).

*Measurements.* As follows (in mm):

| | Holotype | Allotype | Morphotype |
|---|---|---|---|
| Carapace | | | |
| Height | 8.3 | 10.1 | 7.6 |
| Width | 10.9 | 12.5 | 8.2 |
| Length | 20.7 | 23.2 | 16.3 |
| Rostrum | | | |
| Width | 5.8 | 6.1 | 4.2 |
| Length | 3.1 | 3.1 | 2.8 |

| | | | |
|---|---|---|---|
| Areola | | | |
| Width | 6.8 | 7.5 | 5.3 |
| Length | 1.3 | 1.5 | 1.1 |
| Chela | | | |
| Palm inner length | 6.0 | 5.8 | 4.1 |
| Palm width | 7.8 | 8.1 | 4.8 |
| Hand outer margin length | 17.0 | 17.2 | 11.4 |
| Dactyl length | 9.9 | 10.8 | 6.9 |

*Type-locality*: White River, 2.8 miles east of Pettigrew, Madison County, Arkansas. Here the river is about four feet wide and one foot deep.

*Disposition of types*: The holotypic male, Form I, the allotypic female, and the morphotypic male, Form II, are in the collections of the United States National Museum (Nos. 115520, 115521, and 115522, respectively). Topoparatypes are in the collections of the Museum of Comparative Zoology, Harvard University (No. 12638; 1 ♂I, 1 ♀) and of the author (1 ♂I, 4 ♀, 2 ♀j). Other paratypes are in the collections of the author (2 ♂I, 2 ♂II, 6 ♀, 1 ♀j) and the Ohio State Museum of Natural History (1 ♂I, 2 ♀).

*Range: Orconectes williamsi* is known from only three localities, all in the headwaters of the White River in Madison County, Arkansas: (1) The type-locality; (2) White River, 0.9 mi. E Pettigrew; and (3) Small stream tributary to War Eagle Creek, 8.2 mi. N junction of State Routes 16 and 23, on Rte. 23.

*Variations*: Only slight, insignificant variations were found in the type series. These were mostly differences in spination of the several loci at which spination can be found.

*Relationships: Orconectes williamsi* is a member of the Hylas Group of the Propinquus Section of the genus *Orconectes*. Its affinities are probably close to *O. n. nana* Williams (1952) and *O. n. macrus* Williams (1952). It differs from both in having a rostrum which is less compressed laterally, having a more oval annulus, and in lacking a strong cephalic shoulder on the first pleopod.

*Associates:* At the type locality *O. williamsi* was the only crawfish collected, but at both of the other localities it was collected with *O. m. meeki* (Faxon, 1898).

*Remarks: Orconectes williamsi* has a ground color which is light brown or tan and the entire body is mottled in dark brown, or sometimes black. Most of the specimens which I collected (localities 2 and 3 above) were taken from pool areas with *O. m. meeki* being found in the riffles. *O. williamsi* was found under proportionately very large stones. Stones of the same size in riffle areas yielded *O. m. meeki* of about 40–50 mm cephalothorax length, and smaller stones in the pool areas covered only juveniles of both species.

## Literature Cited

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